POSTGRADUATE CURRICULUM

Department of Urban and Regional Planning
Bangladesh University of Engineering and Technology (BUET)

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* Only for Non-BURP Students

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* Only for Non-BURP Students

N.B. Non-departmental courses can be included as elective course upon recommendation of the departmental BPGS.

2. DETAIL DESCRIPTION OF THE COURSES

Plan 6000: Thesis

Eighteen credits course.

Independent study supplemented by conferences and article publications.

Plan 6020: Project

Six credits course.

Independent study on a particular aspect of urban and regional planning.

Plan 6101: Planning Theories and Practices

For Non-BURP students. Three credits course (Contact hour: 3 hours/week).

Definition of planning, stages of planning process. Dimensions of development planning, spatial versus sectoral planning, objectives of spatial planning. Stakeholders in the planning process. Ethical theory and planning practice. Planning approaches: traditional approach, strategic/structure approach, systems approach, advocacy planning, participatory planning. Planning practice and process in Bangladesh: Master Plan for Dhaka 1917, Dhaka Metropolitan Development Plan, Detailed Area Plan, Master Plans for different towns of Bangladesh, and other city/town planning documents.

Plan 6102: Special Studies

Three credits course (Contact hour: 3 hours/week).

Individual studies on special topics/issues related to the area of specialization.

Plan 6103: Economics for Planners

For Non-BURP students. Three credits course (Contact hour: 3 hours/week).

Concerns of economics: resources and wants, economics for planners. The need, nature and type of economic analysis viz., market mechanism, micro vs. macro-economics. Theory of consumer's demand. Theory of production, scale of production, internal/external economies/diseconomies, production function, returns to scale, efficiency of resource allocation and product pricing under different market situations. Public welfare and subsidies. Nature of cost and cost curves. Theory of distribution: rent for land, wages for labor, interest for capital and profit. Macro-economics, national income, theory of income and employment.

Plan 6111: Urban Planning Principles and Techniques

For Non-BURP students. Three credits course (Contact hour: 3 hours/week).

Definition, objective and scope of urban planning. Roots of modern town planning. Theories of urban structure: Concentric Zone Theory, Sector Theory, Multiple Nuclei Theory. Urban land use: classification of land use, land use values, land use plan making process. Concept of urban development: compact versus sprawl, new town, satellite town, corridor plan, finger plan. Planning principles for- town center, residential neighborhood unit, commercial facilities, open space and historic site. Techniques for land development: land readjustment, guided land development, urban renewal, site and service scheme.

Components of development management plan. Urban development and growth management tools: zoning, urban growth boundary, taxation. Cotemporary concepts in urban planning and management. Legal instruments for urban planning and management in Bangladesh: Urban and Regional Planning Act, Town Improvement Act, Building Construction Rule, Private Residential Land Development Act, Bangladesh National Building Code (BNBC), Paurashava Ordinance.

Plan 6113: Governance

Three credits course (Contact hour: 3 hours/week).

Concept and definition of government and governance. Dimensions of governance. Theories of local governance. Concept and challenges of good governance. Types of governance and institutional framework. Democracy, local autonomy and development. Concept of City Governance. Actors, institutions and politics of governance. Emerging issues of governance.

Governance in developing country. Governance in Bangladesh: history, reforms, challenges. Governance in planning. Bangladesh context. Case studies.

E-government and e-governance: models of e-government, models and stages of e-governance.

Plan 6115: Urbanization in Developing Countries

Three credits course (Contact hour: 3 hours/week).

Urbanization in the global context: nature of urbanization in developed and developing countries. Theories of urbanization and development. Historical perspectives on urban development in South Asia. Models of urban structure: The Colonial- Based City Model, The Bazaar-Based City Model.

Emergence of mega urban regions in Asia. Rural-urban migration: structural determinants of migration, migration strategies and policy response. Major challenges of urbanization in developing countries: poverty, power and politics, formal versus informal sector, transportation and mobility, service and infrastructure. Case studies on urbanization challenges from home and abroad.

Plan 6117: Land Use Policy and Planning

Three credits course (Contact hour: 3 hours/week).

Land use values-social, economic and environmental values. Land use and property rights.

Land use and location: the bid-rent function, general equilibrium theory. Smart growth principles. Healthy city concept. Land use control and zoning. Urban and regional growth and land use changes.

Contemporary land use policies. Intelligent land use planning: concepts and policy relevance.

Land use allocation and land use change models: characteristics, methods and applications.

Plan 6121: Housing Process and Practices

For Non-BURP students. Three credits course (Contact hour: 3 hours/week).

Concept, definition and scope of housing. Social, physical, economic and cultural aspects of housing. Typology and forms of ownership in housing. Housing as a major user of urban land. Housing and urban land uses. Accessibility to housing by different income groups and with different abilities. Housing finance and resource mobilization. Housing as an element of local, regional and national economy. Urbanization and demand for housing.

Nature of housing problems in the urban and rural areas of Bangladesh. Scopes for sustainable housing development including real estate development. Public and private sectors in housing. Factors impending housing supply. Housing institutions and capacity building. Housing policies and relevant programs in Bangladesh and other developing countries.

Plan 6123: Low-income Housing and Informal Settlement

Three credits course (Contact hour: 3 hours/week).

Right to adequate housing. Housing affordability. Concepts, definition and scope of low-income housing and informal settlements. Homelessness. Eviction and rehabilitation. Aspects of informal housing development: housing, location, infrastructure and access to

land, construction material and other resources. Role of government, NGOs and CBOs for low-income housing. Low-income housing and informal settlement upgrading schemes: local and global experiences.

Governance and management of housing and utility service in informal settlement. Financing low-income housing. Pro-poor housing policy: experience from home and abroad. Low-income housing: social and environmental issues, disasters and risks. Challenges of scaling up low-income housing. Strategies for development of low-income housing and informal settlements: on-site and off-site upgrading or new housing development, rehabilitation and resettlement, social housing, sites and services schemes, core-housing, land-sharing.

Plan 6131: Rural and Regional Planning

For Non-BURP students. Three credits course (Contact hour: 3 hours/week).

Distinction between urban and rural areas. Socio-economic bases of rural communities. Process of rural planning. Rural development planning models: V-AID, Comilla Model, IRD. Rural industrialization. Rural infrastructure development. Rural development policies and programs in Bangladesh. Governmental and non-governmental organizations involved in rural development activities. Problems and issues in rural planning in Bangladesh.

Introduction to regional planning. Need and scope of regional planning. Definition and types of regions. Formal and functional regionalization and the delineation of planning regions. Economic structure of regions. Short-run regional analysis: economic base theory, inter-regional trade multiplier, regional input-output model. Long-run regional growth analysis: aggregate growth models- sector theory, stage theory, export base theory; disaggregated approach- shift share analysis. Location of industry: theory and practice. Spatial structure of region – central place theory, growth pole theory.

Plan 6133: Rural Land Use and Development Planning

Three credits course (Contact hour: 3 hours/week).

Issues and challenges in rural development, and rural land use and infrastructure planning. Rural land use planning: Compact township development, UFRD. Rural infrastructure development: transport, market/growth center, storage, energy, rural water supply and sanitation infrastructures. Rural accessibility planning, IRAP. Case studies on rural infrastructure development projects. Policies and programs for rural resources development by government and NGOs.

Rural development and structural transformation. Dimensions of rural poverty. Linkages between rural development and poverty alleviation. Resources for rural development - land, water, forest, and livestock. Agriculture modernization and the rural poor. Rural non-farm and off-farm activities. Rural-urban linkages. Sustainable rural livelihood approach. Livelihood diversification. Theories of rural and agricultural development. Food security and regional food system.

Plan 6141: Traffic and Transportation Study

For Non-BURP students. Three credits course (Contact hour: 3 hours/week).

Concept, definition and scope of traffic and transportation. Elements of transportation system. Fundamentals of transport demand and supply. Urban form, land use and transportation interaction. Hierarchy of roads. Capacity and level of service.

Transportation study: the network, speed, journey and delay surveys, vehicle volume counts, O-D survey, parking survey. Planning standards for transport infrastructure: geometric design. Traffic control and safety: traffic signs, road markings, traffic signals, traffic calming. Transport modes and their characteristics, costs/service/operations. Pedestrian traffic. Street furniture. Parking.

Fundamentals of travel demand modeling: trip generation, trip distribution, trip assignment and modal split.

Plan 6143: Transport Policy and Development

Three credits course (Contact hour: 3 hours/week).

Transport and strategic development: Transport, urban form and density. Decentralization/hierarchial urbanization and transport development. Urban-rural linkage and transport. Transport infrastructure and tourism development. Transport infrastructure and economic development.

Transport system planning: Multi-modal network planning. Gateway (airport, seaport) and corridor area planning. Transport projects and local and regional development. National transport network planning and integration. Intelligent Transport System. Rural transport for inclusive development. Planning and prioritization of rural roads.

Context and current approaches to sustainable transport development. Policy and governance issues: transport systems' objectives-equity, economic efficiency, safety, regional development, environmental management. Relative role of modes and transport

infrastructure. Transport demand management. Role of public and private organizations. National policies and plans: Bangladesh and abroad. Case studies.

Plan 6145: Planning for Non Motorized Transport (NMT)

Three credits course (Contact hour: 3 hours/week).

Concept and typology of NMT. Importance of NMT. Renewed interest in NMT–health and environmental concern. Special importance on NMT in rapidly urbanizing countries like Bangladesh.

Planning NMT facilities: transport-land use interaction with special focus on NMT. Using land use regulations for housing, retail business, community facilities etc. for promoting pedestrian and other non motorized vehicles (NMVs). Integration of NMT and public transport. Planning with car in mind versus planning with NMT focus.

Fixed/parking NMT facilities. NMT network analysis–planning and designing footpath, bi-cycle lanes, rickshaw lane and network. Design criteria, network design principles. Signage and marking.

NMT modelling and simulation. Nature of NMT fatalities and considerations for safe NMT use and mobility. Safe crossing facilities for NMTs. NMTs for physically challenged and differently able people.

Policy and politics for and against NMT: NMT policies–global and national scenario. Success stories of NMT. Education, encouragement and enforcement for promoting NMT.

Plan 6151: Environmental Management in Planning

For Non-BURP students. Three credits course (Contact hour: 3 hours/week).

Basic terminologies of Environmental Planning and Management. Theories of natural systems. Concepts in environmental planning. The environmental impacts of human actions.

Tools for environmental planning and management: SEA, IEE, EIA, RA.

Environmental pollution: air, water, soil, and noise. Managing critical environmental issues: solid waste, fecal sludge, hazardous service and industry. Environmental profile, relevant rules and regulations of Bangladesh. Global and national policies for sustainable development.

Plan 6153: Disaster Management in Planning

For Non-BURP students. Three credits course (Contact hour: 3 hours/week).

Definition and concepts: hazard, disaster, disaster management. Link among planning, development and disaster management. Models of disaster management: Disaster Cycle, Expand-Contract Model, PAR model.

Natural hazards and their management in Bangladesh: floods, cyclones, and earthquake. Man-made disaster: fire, and industrial accident. Institutional framework of disaster management in Bangladesh. Climate change in the context of Bangladesh.

Plan 6155: Disaster Risk Reduction and Adaptation

Three credits course (Contact hour: 3 hours/week).

The concept of disaster risk reduction and management: disaster risk and vulnerability, risk assessment, risk management, adaptation, and mitigation. Global and national frameworks of disaster management: Kyoto Protocol, Hyogo Framework, Sendai Framework for Disaster Risk Reduction 2015-2030, Paris Agreement, COP, IPCC reports. National policies, plans and acts on disaster management: Bangladesh Climate Change Strategy and Action Plan (BCCSAP), National Adaptation Programme of Action (NAPA), INDC. Institutional framework in Bangladesh. Community based disaster management, indigenous knowledge. Gender perspective in disaster.

Risk reduction models: Logical models, Integrated Models and Cause Effect Models. Techniques of risk and vulnerability assessment. Risk Reduction Strategies. Socio-political and economic dimensions of disaster. Strategies for adaptation and mitigation. Concept and process of Risk Sensitive Land Use Planning (RSLUP). Urbanization and disaster risk, urban vulnerability factors. Case studies on global and national practices.

Plan 6161: GIS in Urban and Regional Planning

For Non-BURP students. Three credits course (Contact hour: 3 hours/week).

Fundamentals of GIS. Elements and benefits of GIS. Nature, model, and dimensions of spatial data. Attribute of aspatial data. Sources of spatial data. Types of spatial entity. Spatial data model: vector and raster. Vector and raster data structure. Projection and spatial referencing. Methods of GIS data input. GIS data editing. Attribute data management: accuracy, precision, and error in GIS data. Data quality in GIS. Queries and selection options in GIS.

Spatial analysis: measurement of length, perimeter, area. Geo-processing tools: Buffer, Overlay, Proximity, Dissolve, Clip, Intersect, Erase. Surface analysis. Examples of GIS application: suitability analysis, network analysis, resource inventory etc.

Plan 6191: Statistics for Planning Analysis

For Non-BURP students. Three credits course (Contact hour: 3 hours/week).

Definition of data. Measurement level of data. Summarizing data: frequency distribution and graphical presentations, statistical descriptions- samples and populations. Measures of central tendency- mean, median, mode. Measures of dispersion- range, mean deviation, variance and standard deviation, moments, skewness and kurtosis.

Basic probability distributions: discrete and continuous probability distributions- Binomial, Poisson and Normal distributions. Sampling, sampling design and sampling distributions. Decision analysis: statistical inference- point and interval estimation, hypothesis testing, analysis of variance, chi-square test. Simple correlation and linear regression- least-squares equation, goodness-of-fit criteria, standard errors, significance tests for coefficients. Non-parametric tests.

Population projection: aggregate approach- trend line, comparative, ratio and regression method; composite approach- cohort survival method. Index number.

Plan 6211: Physical Infrastructure Planning and Management

Three credits course (Contact hour: 3 hours/week).

Infrastructure: issues, challenges and opportunities. Infrastructure and development, preserving and safeguarding infrastructure. Infrastructure provision: using market and beyond markets in infrastructure provision. Technical systems of urban infrastructure: water supply, sewerage and drainage, energy, information and communication technology. Institutions for infrastructure management: problems and issues. Pricing and financing infrastructure. Taxes and charges. Public-private partnership. Telework: definition, challenges and opportunities. Impact on urban form and infrastructure.

The history of infrastructure development in Bangladesh. Urban infrastructure services including transport, water and sewerage, information and communication technology, energy.

Plan 6213: Urban Informality

Three credits course (Contact hour: 3 hours/week).

Concept of informality. Informality versus formality. Importance of informality in planning. Informality in urban sectors- housing, commerce, transport, and urban service provision. Socio-political, administrative and legal contexts associated with informality. Economic consequences of informality. Inclusive planning: challenges, prospects and strategies. Comparative case studies from the developing world.

Plan 6221: Real Estate Planning and Management

Three credits course (Contact hour: 3 hours/week).

Definition and concept of real estate development. Real estate terminologies and instrument: contract, deed, lease, mortgage, broker and brokerage. Real estate economics: characteristics of housing market, income and housing location, housing price estimation. Real estate market characteristics, investment strategies and trade cycle both in long run and short term. Evaluation of real estate projects: project cycle, cost estimation, feasibility study, environmental impact, implementation, monitoring and measurement. Real estate financing: state development finance and consumer finance. Real estate measures: regulatory measures to guide and monitor housing development and the developers. Formal housing finance institutions. Real estate management. Real estate practice in Bangladesh: Real Estate Development and Management Act 2010.

Plan 6231: Planning and Governance of Mega Urban Regions

Three credits course (Contact hour: 3 hours/week).

Concepts, terms and definitions: Mega city, Meta city, Metropolis, Megalopolis, Metropolitan Area, Primate city, urban agglomeration, conurbation. Mega-city regions in Asia: emergence, challenges and opportunities. Key issues in mega urban region's planning: transportation and mobility, housing, service and infrastructure. Planning of mega urban regions: inner city redevelopment, development of urban periphery, development of poly-nucleated regions. Globalization and urban governance. Governance problems of mega urban regions. Types of governance of mega urban regions. Best practices in mega urban regions.

Plan 6235: Resettlement Planning

Three credits course (Contact hour: 3 hours/week).

Introduction to concept, taxonomy and typology: development and displacement, voluntary and involuntary, resettlement and rehabilitation, refugees and internally displaced people. Resettlement for urban development, cultural and heritage conservation, linear and point infrastructure development, natural resource and bio-diversity management, natural and man-made disaster.

Resettlement sociology and political economy: gender, poverty, human rights, equity and justice in distribution of costs and benefits, participation in and resistance to resettlement, states and civil society. Anthropological analyses and political economy of political resettlement and conservation resettlement. Compensation and livelihood restoration: measures to improve or restore livelihoods, resolution of potential conflicts or grievances, resettlement in land or putting constraints to access to land and other property/resources, infrastructure. Post-move livelihood and beyond mitigation- creating common and collective values and benefits.

Resettlement management: costs, budgeting and financing, organizations for planning and implementation and construction, payment modes. Legal and policy issues: laws in Bangladesh regarding land acquisition, Khas land, alluvial and dilluvial land. Resettlement policies of different countries and donor agencies/development partners. Case studies.

Plan 6233: Urban Economics

Three credits course (Contact hour: 3 hours/week).

Concepts: urban area, urbanization, urban growth, urban economics. Development of cities: comparative advantage and urban development, internal scale economies and agglomerative economies. Land use in the mono centric city: location of commercial, industrial and residential land uses, empirical estimates of the population density function, land-rent function, residential bid-rent function, trade-off between land and commuting costs. Land use in modern cities. Land use control and zoning. Use of economic tools to analyze urban problems including housing, transportation, urban environment and poverty. Urban problems and local government: urban fiscal problems, methods of financing urban government expenditures.

Plan 6241: Urban Transportation Planning

Three credits course (Contact hour: 3 hours/week).

Modal characteristics of urban transport and comparison: walking, non-motorised vehicle, para-transit, taxi service, public/mass transport - BRT, MRT, LRT. Community based transport. Water based transport. Multi-modal integration. Public transport for economy, environment, energy, space use, and social inclusion. Intelligent Transport System. Parking. Sustainable urban transport: context and approaches. Conceptualising mobility and sustainable urban mobility - difference in mobility needs and transport justice.

Public transportation planning, operation and management: public transportation network planning. Location of terminals and stops. Public transportation services and performance. Fleet and facility investment planning. Fare policy. Subsidies. Ticketing. Scheduling and routing. Route franchising.

Plan 6243: Transportation Planning and Modeling

Three credits course (Contact hour: 3 hours/week).

Introduction to transport planning and modelling: characteristics of transport problems, techniques and processes used in solving transportation problems, modeling and decision making, issues in transport modeling. Data and space: basic sampling theory, errors in modeling and forecasting, data collection methods, network and zoning systems.

Travel demand modelling: trip generation, trip distribution, trip assignment and modal split.

Discrete Choice Modelling: theoretical framework, random utility theory, different types of discrete choice models-Logit, Probit, Mixed Logit, GEV Models, other choice models and paradigms, specification and estimation of discrete choice models.

Freight Demand Models: factors affecting goods movements, pricing freight services, data collection for freight studies, aggregate freight demand modelling- freight generation and attraction, distribution, assignment, modal split, disaggregate approach.

Activity Based Models: activities, tours and trips; tours, individuals and representative individuals; the ABM system; structuring activities and tours; solving activity based models.

Plan 6245: Transport Economics

Three credits course (Contact hour: 3 hours/week).

Introduction to Transport Economics: demand, supply, equilibrium, elasticity, consumer surplus, returns to scale, economies of scale, revenues and profit maximization. Identification and measurement of transport costs and benefits. Value of travel time savings.

Accident costs. Transport and economic development. Transport and urban development. Transport as an economic activity. Factors influencing transport demand. Demand and supply issues regarding passenger and freight.

Regulation of supply and demand: command and control type of regulation. Fiscal measures - environmental taxation, subsidies and pricing of transport. Road user charges and principles of road pricing, congestion pricing. Road space rationing. Capacity expansion. Safety and economic regulations. Issues of social, geographical and temporal equity.

Appraisal and evaluation of transport projects: feasibility and evaluation of cost, impacts and performance levels. Evaluation of alternatives. Financial evaluation- NPV, IRR, cash flow analysis. Social and financial benefits- cost-benefit analysis. Measures of land value and consumer benefits from transportation projects. Prioritization of projects. Multi-criteria decision assessment. Financing transportation projects: taxation and user fee, financing through loans, bonds, PPPs, concessions and social business. Performance evaluation of transport systems. Case studies and policies.

Plan 6251: Environmental and Natural Resource Economics

Three credits course (Contact hour: 3 hours/week).

Economy-environment relationship. Introduction to Environmental Economics: economic development and the environment. Scarcity of natural resources and limits to growth: spaceship economy, cowboy economy, steady state economy. Environmental ethics.

Market failure, property rights, externalities and environmental problems: Pigovian tax and Coase Theorem. Social welfare function and theories. Problem of social cost and social choice. Criteria for evaluating environmental policy. Command and control approach: standards, incentives and their economics. Market based strategies: emission charges and subsidies, transferable rights of pollution.

Concept of natural resources and their types. Economics of natural resource allocation: allocation of depletable, non-recyclable resource, allocation of renewable resource, open access and common-pool resource allocation. Economics of energy resource allocation.

Environmental valuation: concepts and methods- Contingent Valuation Method, Travel Cost Method, Hedonic Regression Analysis.

Plan 6253: Cities, Regions and Climate Change

Three credits course (Contact hour: 3 hours/week).

Concepts of global warming, its impacts and adaptation: IPCC. Urban, regional, and local implications of global warming and climate change e.g. sea level rise, coastal vulnerability, salt water penetration, flooding, heat stress and extreme weather events. Effects of climate change on cities and regions. Economics of climate change: economic trade-off and distributional issues. Trade-off among policy options.

Planning for climate change: assessing development opportunities and capacities. Climate resilient city. Strategic planning: strategy implementation, strategies for adaptation and mitigation, migration as strategy.

Case studies: Climate change adaptation in city planning.

Plan 6261: Advanced GIS and Applications

Plan 6161 is the pre-requisite for students of Non-BURP background.

Two (Theory) + One (Sessional) credits course (Contact hour: 2 hrs/week (Theory) + 2hrs/week (Sessional))

Nature and models of spatial data. Spatial data analysis techniques. Geo-processing tools. Distance functions. Interpolation. Density estimation. Network analysis. Multi-criteria overlay. Suitability analysis. Satellite image processing: image classification.

GIS applications in Urban and Regional Planning: project work.

Plan 6281: Research Methods

Three credits course (Contact hour: 3 hours/week).

Science and research. Dimensions of research. Theory and research. Value judgment in research. Ethical issues in research. Defining research problem: choosing and justifying research problem, objective and hypothesis. Conducting literature review. Measurement and operationalization of variables. Data collection methodology: experiments, field research, content analysis of secondary data, survey research. Data processing, analysis, and interpretation. Writing research proposal, thesis, and article.

Plan 6282: Seminar on Contemporary Planning Issues

Non-credit course (Contact hour: 3 hours/week).

Lectures will be delivered by academics, and practitioners on contemporary planning issues. Lectures will be followed by interactive discussion.

Plan 6283: Qualitative Research Methods

Three credits course (Contact hour: 3 hours/week).

Definition, scope and limitation of qualitative research. Linking qualitative and quantitative research. Theoretical position underlying qualitative research. Designing qualitative research: basic design, case study, comparative study, snap shot, retrospective study, longitudinal study and other. Verbal data collection: interview, narratives, focus group and analysis process. Observation and ethnography. Visual data collection. Using document as data. Analyzing conversation, discourse and genre, narrative and hermeneutic analysis, text interpretation. Ethical issues in qualitative research.

Plan 6291: Multivariate Data Analysis in Planning Research

Plan 6191 is the pre-requisite for students of Non-BURP background.

Two (Theory) + One (Sessional) credits course (Contact hour: 2 hrs/week (Theory) + 2hrs/week (Sessional))

The nature of multivariate analysis. Multivariate techniques: analysis of dependence, analysis of interdependence. Analysis of dependence: multiple regression analysis, discriminant analysis, canonical correlation, Multivariate Analysis of Variance (MANOVA). Analysis of interdependence: factor analysis, cluster analysis, multidimensional scaling.